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10/525,204	02/22/2005	Naohiko Takeyama	Q86245	7746
23373 7590 11/25/2009 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037				
EXAMINER				
SYKES, ALTREV C				
ART UNIT		PAPER NUMBER		
1794				
NOTIFICATION DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

**Application No.**

10/525,204

**Applicant(s)**

TAKEYAMA ET AL.

**Examiner**

ALTREV C. SYKES

**Art Unit**

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 3-16 and 28-33 is/are pending in the application.
- 4a) Of the above claim(s) 12-16 and 28-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3-11, 32 and 33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendment to the claims filed on July 10, 2009 is acknowledged by examiner and has been entered. Claims 1, 3, and 5 have been amended. Claims 1, 3-11 and 32-33 have been examined on the merits as set forth below.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1, 3-11, and 32-33 have been considered but are moot in view of the new ground(s) of rejection necessitated by amendment to the claims.
3. With respect to the Okamoto et al. reference, examiner notes that the example and section relied on by applicant in the remarks filed appear to be directed only to the formation of island and sea component fibers. Specifically, Col 7, lines 71-75 seems to be directed to the removal of the sea component after impregnation with the water soluble high-polymeric substance. Examiner finds support for this conclusion in Col 5, lines 30-70 wherein the process is explained in further detail. However, examiner still maintains the position that the Okamoto et al. reference teaches a surface layer of an elastic polymer produced by gravure coating. Support for this position is found in Col 5, lines 71-75 and Col 6, lines 1-20 wherein the layer is formed subsequent to impregnation and removal of the earlier applied water soluble high-polymeric substance and is further referred to as a covering layer (or surface covering) thereby separating it from the other process.

4. Additionally, with respect to the limitation that the elastic polymer in the first substrate layer changes continuously in the direction of thickness, examiner notes that applicant has not discussed this feature in detail in the specification. As such, examiner notes that applicant has once again stated for the record that the property is obtained by applying a solution of an elastic polymer to one side of a sheet. Applicant states that the change of polymer concentration would be observed only just below the surface of the first substrate layer and not through the first substrate layer. Applicant further states that in the present invention continuous change results when the substrate is produced, not when the surface layer is made as in Okamoto et al. (See pgs. 13 and 14 of last filed remarks) Examiner notes that applicant has not claimed a degree of penetration of the elastic polymer to relative to the position that the change of polymer concentration is just below the surface of the first substrate layer and not through the first substrate layer. As such, it is the position of examiner that the continuous change in polymer concentration would be contributed to the polymer component making up the first substrate layer. Therefore, applying the surface layer to one side as taught by Okamoto et al. would provide for the gradient throughout the first substrate layer.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. Claims 1-4, 8-11, and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashida et al. (US 5,503,899) in view of Taguchi et al. (US 4,741,075) and further in view of Okamoto et al. (US 3,731,352), Okamoto et al. (US 3,705,226)

Regarding claims 1, 3, and 4 Ashida et al. discloses a suede-like artificial leather which is composed of fiber bundles and an elastomeric polymer and has fibrous nap on its surface. Ashida et al. discloses the fiber bundles are composed of fine fibers (A) and microfine fibers (B), said fiber bundles not substantially containing the elastomeric polymer in the interspaces among the individual fibers constituting each of the fiber bundles. (See Abstract) Ashida et al. discloses the artificial leather has good appearance and hand (i.e. soft touch). (See Abstract and Col 1, lines 10-16) Ashida et al. discloses at least one of the surfaces of each sheet is given a napping treatment (i.e. buffing with sand paper) to form a napped surface composed chiefly of the fine and microfine fibers. (See Col 6, lines 52-57) As such, Ashida et al. discloses a first substrate layer as claimed by applicant. Ashida does not specifically disclose a second substrate layer .

Taguchi et al. discloses many attempts have been made to obtain soft and dense artificial leather like that of natural leather. Conventionally, these products comprise a base fiber structure and a binder. Attempts to improve the base fiber structure include the use of non-woven sheet, woven sheet, knitted sheet, and woven or knitted sheet integrated with short fiber web. On the other hand, super-fine fibers have been used as fibers which constitute base fiber sheet. Also the choice of binder for the synthetic leather, such as polyurethane, has been improved. (See Col 1, lines 9-19)

As Ashida and Taguchi et al. are both directed to artificial leather, the art is analogous. Therefore, a prima facie case of obviousness exists for one of ordinary skill in the art at the time of the invention to utilize a base fiber structure as taught by Taguchi et al. in the suede-like artificial leather as disclosed by Ashida et al. motivated by the desire to obtain a soft and dense artificial leather more like that of natural leather. (See Col 1, lines 9-10) Taguchi et al. does not disclose a weight of 30 to 500 g/m<sup>2</sup>.

Okamoto et al. ('352) discloses the conventional fibrous sheets such as non-woven fabrics are roughly classified into two typical types. In one type of fibrous sheet, fibers are massed into a sheet form and are bonded or fused to each other. Another type of fibrous sheet is made up of mutually, randomly and three-dimensionally entangled numerous fine fibers. This entanglement of the fibers is effectuated by the application of

the needle punching operation to the fibrous mass. This type of fibrous sheet will hereinafter be named as "entangled type." (See Col 1, lines 12-27) Okamoto et al. ('352) discloses another object of the invention is to provide a fibrous sheet durable against various types of external load applications and having an excellent dimensional stability even through long-time use under severe conditions. (See Col 2, lines 56-61) Okamoto et al. ('352) discloses the fibrous sheet is composed of three-dimensionally entangled numerous bundles of extremely fine fibers converted from the island components. This particular internal configuration of the fibrous sheet has excellent mechanical properties with enhanced handling quality and surface touch. (See Col 7, lines 45-52) Okamoto et al. ('352) discloses the fibrous sheet of the present invention is suited for such uses as artificial leathers, belts or bags. (See Col 7, lines 60-64) Okamoto et al. ('352) discloses the web should be  $350 \text{ g/m}^2$ . (See Col 8, lines 27-30)

As modified Ashida et al. and Okamoto et al. ('352) are directed to artificial leathers, the art is analogous. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the "entangled type" nonwoven fibrous sheet as taught by Okamoto et al. ('352) as the base fiber sheet as disclosed by modified Ashida et al. in order to provide excellent mechanical properties with enhanced handling quality and surface touch to an artificial leather product. (See Col 7, lines 45-52) Okamoto et al. ('352) does not disclose that concentration of the elastic polymer in the first substrate layer changes continuously in the direction of thickness and a surface layer as claimed by applicant.

Okamoto et al. ('226) discloses an artificial leather having a very natural leather-like internal configuration together with an excellent suede touch on one surface thereof. (See Col 2, lines 48-53) Okamoto et al. ('226) further discloses the surface of the fibrous sheet layer may be coated with elastic high polymer using a gravure coater. (See Col 6, lines 16-17) Okamoto et al. ('226) discloses a high-polymeric substance layer is formed on a one surface of the basic fibrous sheet layer. When a thick high-polymeric substance layer is formed, it is preferable to make the layer finely porous for enhancement of the air and wetness permeability of the obtained artificial leather. (See Col 5, lines 71-75 and Col 6, line 1) Okamoto et al. ('226) discloses it is not always necessary to make this layer porous if it is thin. (See Col 6, lines 2-3) Okamoto et al. ('226) discloses the formation of this covering layer can be done by using a gravure coater. (See Col 6, lines 16-17) Okamoto et al. ('226) discloses the covered surface can be provided with a suede touch by a raising operation. (See Col 6, lines 26-31) Okamoto et al. ('226) discloses the surface of the obtained basic fibrous sheet was brushed for raising of the extremely fine fiber ends. (See Example 3)

As pointed out by applicant the change of polymer concentration would be observed only just below the surface of the first substrate layer and not through the first substrate layer. Applicant further states that in the present invention continuous change results when the substrate is produced, not when the surface layer is made as in Okamoto et al. ('226) (See pgs. 13 and 14 of last filed remarks) As such, it is the position of examiner that the



continuous change in polymer concentration would be contributed to the polymer component making up the first substrate layer. Therefore, applying the surface layer to one side as taught by Okamoto et al. ('226) would provide for the gradient throughout the first substrate layer of modified Ashida.

As Ashida et al. and Okamoto et al. ('226) are both directed to leather-like sheet products, the art is analogous. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention motivated by expected success to utilize the application method of gravure coating as taught by Okamoto et al. ('226) in place of the generalized impregnation as disclosed by Ashida et al. in order to provide the completely expected result of a substrate layer having fiber bundles and an elastomeric polymer.

Regarding claim 4, Okamoto et al. ('226) further discloses the surface layer has a thickness in the range from 0.02 to 5mm. (i.e. 20 to 5000 $\mu$ m) (See Col 7, lines 14-17)

Regarding claims 6 and 32, Ashida fails to teach wherein the total thickness of the first substrate layer and the second substrate layer is 0.2 to 5mm. It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the thickness since it has been held that, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Ashida discloses one of the surfaces of this substrate was buffed to be adjusted to a

thickness of up to 1.20mm, and thereafter the other surface was treated with an emery raising machine to form a napped surface in which the fine and microfine fibers were raised. (See Col 7, lines 47-50) Okamoto et al. ('226) further discloses the surface layer has a thickness in the range from 0.02 to 5mm. (i.e. 20 to 5000 $\mu$ m) (See Col 7, lines 14-17) The burden is upon the Applicant to demonstrate that the claimed thickness is critical and has unexpected results. In the present invention, one would have been motivated to optimize the thickness motivated by the desire to tailor the appearance and hand of the final leather-like sheet product. (See Ashida Example 1)

Regarding claims 8 and 33, Ashida et al. discloses the amount of polyurethane in the fibrous substrate, as solid, is preferably within a range of 10-50% by weight. (See Col 6, lines 29-32) Therefore, examiner notes that the claimed weight ratio of applicant would have been a case of prima facie obviousness in view of the Ashida disclosure. Further, since Ashida et al. discloses the polyurethane in the fibrous substrate is in solid form, examiner has reason to believe that the first substrate layer would also be solid.

Regarding claim 9, Ashida et al. discloses the fine fibers of the fiber bundle have a denier of 0.2 or less. (See Col 3, lines 63-67 and Col 4, line 1) However, the reference is silent as to a total number of fibers in the bundle.

Okamoto et al. ('266) discloses a fibrous bundle of from 0.001 to 0.5 denier fineness and from 3 to 5,000 fibers. (See Col 3, lines 47-49 and 59-61)

As the fineness of the two prior art references overlap, one of ordinary skill in the art would have been easily motivated to combine the two disclosures to arrive at the claim limitations of applicant.

Regarding claim 10, Ashida et al. discloses the elastomeric polymer is polyurethane. (See Col 6, lines 6-21) Ashida et al. further discloses that the fibrous substrate is treated with a liquid which is a non-solvent for the fiber bundle and the elastomeric polymer. (See Col 6 lines 33-37) As the liquid, toluene is used. (See Col 6, line 37)

Regarding claim 11, Ashida et al. discloses the elastomeric polymer is polyurethane or a polyurethane composition. (See Col 6, lines 6-21) While Ashida does not specifically disclose the elastic polymer is porous, examiner has reason to believe that the elastomeric polyurethane would meet the claim limitation. Evidence for this conclusion is found in Okamoto et al. ('226) which discloses a surface covering formed of polyurethane polymers, which may be made thick or thin to tailor the porous nature of the surface. (See Col 5, lines 71-75 and Col 6, lines 1-7) Therefore, one of ordinary skill in the art would have appreciated the suggestion of Okamoto to use a polyurethane polymer as a porous elastic material.

8. Claims 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashida et al. (US 5,503,899) in view of Taguchi et al. (US 4,741,075) and further in view of Okamoto

et al. (US 3,731,352) and Okamoto et al. (US 3,705,226) as set forth above for claim 1, and Nishikawa et al. (US 4,620,852).

Regarding claim 5, Ashida et al. discloses at least one of the surfaces of each sheet is given a napping treatment (i.e. buffing with sand paper) to form a napped surface composed chiefly of the fine and microfine fibers. (See Col 6, lines 52-57) Okamoto et al. ('226) discloses the surface of the obtained basic fibrous sheet was brushed for raising of the extremely fine fiber ends. (See Example 3) While modified Ashida et al. does disclose a suede-like surface consisting of napped fibers, the combined references do not specifically disclose napped fine fibers having a fineness of 0.2 dtex or less.

Nishikawa et al. discloses grained artificial leather. (See Abstract) Nishikawa et al. also discloses a number of proposals have been made as to leather-like fabrics made of ultrafine fibers, such as suede-like, nubuk-like, woven or knitted fabrics, as well as grained artificial leathers. And, now, extra ultrafine fiber around or less than 0.01 denier is attracting our interests to obtain softer hand or more dense appearance. (See Col 1, lines 43-49)

As modified Ashida et al. and Nishikawa et al. are both directed to artificial leather, the art is analogous. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention motivated by expected success to utilize fine fibers having a

fineness of 0.01 denier (0.1 dtex) in order to obtain a softer hand or more dense appearance in the artificial leather article. (See Col 1, lines 43-49)

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ashida et al. (US 5,503,899) in view of Taguchi et al. (US 4,741,075) and further in view of Okamoto et al. (US 3,731,352) and Okamoto et al. (US 3,705,226) as applied to claim 1 above, and further in view of Morishima et al. (US 2001/0038901)

Regarding claim 7, modified Ashida et al. discloses all of the claim limitations as set forth above, but the reference does not specifically disclose the fiber bundle accounts for 40 to 80% of the total space area of all the voids in the elastic polymer surrounding the fiber bundle of the first substrate layer in the section perpendicular to the surface of the leather-like sheet product.

Morishima et al. discloses a nonwoven fabric made from filaments for use as a base fabric for artificial leather. (See [0002]) Morishima et al. further discloses the total area occupied by the fiber bundles is in a range of 5-70% of the cross-sectional area of any cross-section perpendicular to the direction of thickness of the nonwoven fabric. (See [0019]) Morishima et al. discloses that an artificial leather may be produce resulting in lower bending resistance so that a structure is provided with denseness together with softness and both a full and tight handling property. (See [0040])

As modified Ashida et al. and Morishima et al. are both directed to artificial leather products, the art is analogous. Therefore, it would have been obvious to one of ordinary skill in the art motivated by expected success at the time of the invention to utilize 5-70% of the voids in the elastic polymer for the fiber bundles as taught by Morishima et al. in the suede-like leather sheet product of modified Ashida et al. in order to produce a structure provided with denseness, softness, and both a full and tight handling property. (See [0040])

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

### *Conclusion*

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Umezawa et al (US 4,390,566) discloses a leather-like sheet material which , though soft, has good mechanical properties.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALTREV C. SYKES whose telephone number is (571)270-3162. The examiner can normally be reached on Monday-Thursday, 8AM-5PM EST, alt Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/ACS/  
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11/19/09